

NEW NEARCTIC TACHINIDAE<sup>1</sup>

(Diptera)

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The new species described below include some interesting additions to the California muscoid fauna. I am indebted to various collectors, *viz.*, Dr. Paul D. Hurd, Jr., A. T. McClay and Paul H. Arnaud for the privilege of studying extensive lots of materials submitted over the past several years. The present report is based in part upon this material.

***Viviania arrisor* Reinhard, new species**

Allied to *lachnosternae* Townsend, but the third antennal segment including arista and cheek grooves wholly black.

*Male*.—*Head* black in ground color with dense gray to plumbeous pollen; front at vertex 0.21 of head width, equibroad to middle thence widening rapidly into facial angle; frontalia black, a little wider than parafrontal; outer verticals vestigial, three or four frontals below antennal base and two or three suberect preverticals; ocellars long, proclinate; parafrontal with a vestiture of black hairs which extend sparsely downward almost to mid face level; facialia coarsely irregularly bristled on lower third or less, vibrissae far above oral margin; proboscis short, palpus yellow, subequal to length of haustellum; antenna rather slender, third segment slightly over twice length of second and barely reaching lower third of face; long bare arista moderately thickened near base, thence slender to tip, basal segments short; eye bare, extending below vibrissal level; cheek one-third eye-length, clothed with black hairs; occiput flat and pale-haired. *Thorax* and scutellum black, gray pollinose, mesonotum marked with four broad dark vittae in front and five behind suture; dorso-central 3, 4; acrostichal 2 or 3, 3; presutural 2; intraalar 3; supraalar 3; sternopleural 2, 1; pteropleural 1 (small); scutellum with 4 lateral, 1 weak non-decussate apical and 1 discal pair; prosternum with bristly hairs at sides; postnotal slope setose. Legs black, mid tibia with two stoutish anterodorsal bristles, claws and pulvilli elongate. Wing gray hyaline, costal spine small; hind cross vein about its length from cubitulus; first posterior cell open considerably before wing tip; third vein with two or three setae near base; calypters semitransparent white. *Abdomen* black sometimes with a trace of red at sides, entire upper surface dusted with changeable gray pollen showing a brownish tinge in a flat rear angle; one pair of median marginals on segments one and two, a marginal row on three and four, latter also with discals above except near basal margin; genital forceps triangular in rear view with prongs contiguous to tip; accessory process fingerlike, a trifle shorter than forceps but broader than same in profile;

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penis shiny black, recurved near middle and terminating in a pale membrane which is prolonged at the posterior apical extremity.

*Female*.—Vertex 0.26 of head width; two pairs of proclinate orbital bristles, outer verticals short but differentiated; median marginals usually absent on first abdominal segment and anal truncate at apex; pulvilli and claws shorter than last tarsal segment.

*Length*, 9.5–11 mm.

*Holotype male* and allotype female, TOPAZ LAKE, MONO COUNTY, CALIFORNIA, June 26, 1957 (J. W. MacSwain) in the California Academy of Sciences Collection. Paratypes: one male and two females, same data as holotype.

#### *Viviania pedita* Reinhard, new species

As described for the preceding species, but differing in the following characters among others:

*Male only*.—Head pollen yellowish gray, cheek grooves and vibrissal angles pale or reddish in ground color; vertex 0.18 of head width; antenna shorter or about three-fifths facial length, basal segments red; arista micro pubescent, brownish; fourth abdominal segment wholly red and contrasting sharply with preceding ones; mid tibia with one submedian anterodorsal bristle. Length, 10 mm.

*Holotype male*, LAKE PLACID, FLORIDA, March 3, 1945 (J. G. Needham).

#### *Phorocera regilla* Reinhard, new species

A small species, which traces to *festinans* in Aldrich and Webber's key (Proc. U. S. N. M., 63:45–48), but by comparison with the type specimen differs in genital characters among others.

*Male*.—Head pollen gray with yellow tinge on parafrontals; latter sparsely beset with fine hairs and about equal to width of dark brown frontalia; two pre-verticals, ocellars and inner verticals about equal in size; frontals weak, three bristles below antennal base; vertex 0.25 of head width; narrow parafacial equal to facialia inverted; latter bristled to upper third or higher and usually with a secondary outer row of hairs; antenna entirely black, as long as face, third segment much broader than parafacial, six times longer than second; black, bare arista thickened on proximal two-fifths thence suddenly tapered outward to a thin or very delicate tip; cheek hardly one-sixth eye length; eye pilose; proboscis short, palpus brown to reddish apically. *Thorax* and scutellum black, lightly dusted with grayish pollen leaving rather narrow poorly defined vittae on notum. Chaetotaxy: acrostichal 2, 3; dorsocentral 3, 4; intraalar 3; supraalar 3; presutural 2; posthumeral 2; humeral 2; sternopleural 3; pteropleural 1 (small); scutellum with 3 lateral, no apical, 1 poorly differentiated discal pair. Legs black, weakly bristled; hind tibia not evenly ciliated; mid tibia with one median bristle on outer front side; claws and pulvilli exceeding length of apical tarsal segment. Wing slightly smoky becoming grayish on hind margin; third vein with two or three setulae near base;

first posterior cell open shortly before wing tip; hind cross vein oblique and its length from the broadly rounded stumpless cubitulus; costal spine small; calypters transparent tawny. *Abdomen* black, pointed apically, last three segments with pale yellowish gray pollen which extends thinly rearward to or beyond middle of each except along median line; one pair of median marginal bristles on second segment, a marginal row on the two following ones, besides a discal row on anal and a discal pair on each intermediate segment; genitalia black; forceps tapered on basal third, thence subparallel to a blunt or rounded apex, prongs divided on apical half but not divergent; accessory process longer than forceps, ovate and wide in profile but reduced to a subacute apex and concave on outer face; penis shining black basally, with intermediate anterior portion pale membranous, distal part black, compressed and beset with a vestiture of appressed whitish scales.

*Female*.—Vertex 0.28 (average of three) of head width; abdomen broader and usually with grayer pollen than in male; two proclinate orbitals; outer verticals differentiated; wing nearly clear; claws and pulvilli small.

*Length*, 3–4 mm.

*Holotype male*, REDWOOD CITY, SAN MATEO COUNTY, CALIFORNIA, July 27, 1952 (P. H. Arnaud) and allotype female, Mountain Home, San Bernardino County, California, September 12, 1953 (E. I. Schlinger) in the California Academy of Sciences Collection. Paratypes: 14 males, 2 females same data as holotype; 1 male and 2 females, Chiricahua Mts., Ariz., July 8, 1932 and July 4, 1940 (R. H. Beamer); 1 male and 1 female, Graham Mountains, Arizona, 6000–7000 feet, August 9, 1955 (Butler-Noon).

#### *Phorocera ustulata* Reinhard, new species

Differs from the preceding species chiefly as follows:

*Male*.—Parafacial seal brown, pollen becoming thinner and lusterless on parafrontal, latter blackish in most views and hardly equal width of dark brown frontalia; cheek nearly one-third eye length, dusted with gray pollen which extends over entire hind surface of head; vertex 0.33 of head width; third antennal segment subequal to parafacial width; five times length of second; arista thickened on proximal half; facialia narrower and subvertical, with a single row of bristles extending above middle; palpus red to brownish basally; eye with moderately long pale dense hairs; scutellum reddish apically and usually with a well differentiated pair of erect discals. *Abdomen* obovate, last three segments dusted with gray or yellowish gray pollen which extends thinly to hind margin of each in favorable view; one pair of median marginals on segments one and two, a marginal row on three and four besides a row of discals often irregularly spaced on last; intermediate segments with one pair of discals and a vestiture of longish hairs including some bristlelike and erect along median line; genital forceps small, shiny black, tapering gradually with prongs

contiguous to subacute apex; accessory process in profile about as thick as forceps but a trifle longer and tapering to an equally narrow apex which bears a few minute spinose hairs; basal stalk of penis quite slender, distal segment ovate, black with a pale semitransparent area along hind margin.

*Female*.—Vertex 0.34 (average of four) of head width; notal pollen heavier and vittae more distinct than in male; third antennal segment three and one-half to four times second; facialia bristled about to middle; abdomen broadly ovate, with moderately dense gray or yellowish gray pollen on last three segments; claws and pulvilli small.

*Length*, 4–6 mm.

*Holotype male* and allotype female, REDWOOD CITY, CALIFORNIA, February 8 and 9, 1953 (P. H. Arnaud) in Paul H. Arnaud's Collection. Paratypes: 43 males and 1 female, same data as type except in part dated February 1953, on foliage of *Quercus agrifolia*; 6 females, Kings Mountain Road, Woodside, San Mateo County, California, April 17, 1956 (P. H. Arnaud); 198 males and 86 females, Stanford University, Santa Clara County, California, February–April 1952–1958 (P. H. Arnaud); 3 males, Ithaca, N.Y., July 11 and 24, 1935 (K. V. Krombein); 1 male, Babylon, L. I., N. Y., July 13, 1933 (F. S. Blanton); 2 males and 1 female, Bear Mountain State Park, Bear Mountain, N. Y., April 28, 1936 (L. L. Pechuman); and 1 male, Greenwood Lake, N. J., May 1, 1918 (Wm. T. Davis); 1 male, Torrey, Utah, May 9, 1941 (G. F. Knowlton, F. C. Harmston).

#### *Phorocera anassa* Reinhard, new species

Aside from its larger build the present species differs from *P. regilla* Reinhard chiefly as follows:

*Male*.—Parafacial and parafrontal pale yellowish gray pollinose, cheek and occiput cinereous; vertex 0.27 of head width; frontalia narrower than parafrontal; latter with numerous erect black hairs extending from upper extremity to lowermost frontals near arisal level; bare parafacial about equal to width of third antennal segment, which is fully five times longer than second; arista thickened on proximal half; facialia with a single row of bristles ascending well above middle; cheek nearly one-fourth eye length; palpus brownish yellow paler before tip; scutellum reddish apically, with a pair of non-decussate apical bristles set slightly higher up and in front of hindmost lateral and one pair of erect discals far behind middle; hind cross vein a trifle less than its length from cubitulus; calypters pale yellow; last three abdominal segments with gray pollen, which extends thinly to hind margin of each, hairs on entire upper surface erect longish and somewhat bristly along median line; genital forceps slender, prongs contiguous, gradually tapered from base to tip and very thin in profile; accessory process shorter and much broader than forceps; penis entirely black, distal segment glabrous, bowed rearward and tubular in cross

section but tapering slightly towards tip.

*Female*.—Thorax and abdomen with much denser pollen, otherwise similar to male except for the usual sexual differences.

*Length*, 7 mm.

*Holotype male* and allotype female, LAKE WAHA, IDAHO, August 8, 1941, no collector's label.

***Aphantorhapha hurdi* Reinhard, new species**

A minute black fly, dusted with opaque cinerous pollen; legs more or less reddish; hind cross vein strongly retracted, etc.

*Male*.—Head pollen whitish on pale background; front nearly one-half head width, inner orbits parallel from vertex to cheeks; frontalia pale yellowish fully twice width of parafrenal, latter practically bare outside frontal row; proclinate ocellars short but distinct; two verticals and proclinate orbitals; one frontal bristle below antennal base; bare parafacial sublinear below middle; facialia bare; vibrissae short, on oral margin; antenna red basally, third segment largely blackish and about four times second; arista barely exceeding length of third antennal segment, thickened to pointed tip, basal segments elongated and each subequal one-half length of apical segment; proboscis short, palpus yellow; cheek bare, one-third eye length; back of head flat and practically bare. *Thorax* and scutellum with rather dense gray pollen, notum not vittate, transverse suture obsolete; acrostichal 2, 3; dorsocentral 2, 3; presutural 2; sternopleural 3 (lowermost hairlike); scutellum with extreme apex tinged with red, 3 lateral bristles and a non-decussate hairlike apical pair; propleuron and postnotal slope bare. Legs rather short and stoutish, bristling very weak; claws and pulvilli minute. Wing hyaline, reaching well beyond apex of abdomen; first posterior cell closed at costa a trifle before exact wing tip; last section of fifth vein three-fourths to equal length of preceding section; third vein with three or four setulae extending half way or more to small cross vein; costal spine minute; epaulet yellow; calypters opaque white. *Abdomen* black with extreme hind edge of segments one to three contrasting pale yellow in ground color, entire upper surface dusted with gray pollen, a vague median vitta generally apparent; one pair of median marginals on second segment and a marginal row on third and fourth; genital segments small and retracted.

*Female*.—Very similar to male; genitalia retracted within anal orifice. not adapted for piercing.

*Length*, 2.25–2.75 mm.

*Holotype male* and allotype female, SURPRISE CANYON, PANAMINT MOUNTAINS, INYO COUNTY, CALIFORNIA, April 24, 1957 (P. D. Hurd, Jr., G. I. Stage) in the California Academy of Sciences Collection. Paratypes: one pair, same data as holotype.

***Homalactia facula* Reinhard, new species**

Differs from *H. harringtoni* (Coquillett) mainly in having the legs, abdomen and antennae mostly pale reddish in ground color.

*Female only*.—Head thinly gray pollinose; vertex 0.32 of head width; decussate inner and erect outer verticals nearly equal in size; ocellars small or hairlike; one proclinate and two reclinate orbitals; frontals in a single row descending almost to arista level; frontalia pale yellow, wider than one parafrontal; entire face including cheeks pale in ground color; facialia with a few bristly hairs next to vibrissae, which are situated on level with oral margin; parafacial very narrow and bare; antenna largely reddish, third segment slightly darker on outer side beyond middle, about two and one-half times longer than second; bare arista rather short, thickened on basal three-fifths or more; proboscis short; palpi yellow; cheek nearly two-fifths eye length. *Thorax* black lightly sprinkled with grayish pollen; three post dorso-centrals and three sternopleurals; pteropleural nearly as strong as intermediate supraalar; scutellum yellowish apically, bearing three lateral bristles and a decussate apical pair. Wing subhyaline with small and hind cross veins infuscated, apex of first vein and base of third less distinctly so; first, third and fifth vein setose; first posterior cell open shortly before extreme wing tip; epaulet yellow; calypters tawny. Legs except tarsi yellow; middle tibia with two median anterolateral bristles; claws and pulvilli short; fore tarsi moderately flattened and stoutish. *Abdomen* reddish yellow basally, hind margin of intermediate segments infuscated, fourth wholly black and each gray pollinose on narrow basal edge; second segment with one pair of median marginal bristles, a marginal row on the two following ones besides a discal row on the last and one pair of discals on segments two and three.

*Length*, 4 mm.

*Holotype female*, RIVERSIDE, CALIFORNIA, July 15, 1955 (J. C. Hall), in the California Academy of Sciences Collection.

#### *Siphonopsis conata* Reinhard, new species

A small species with a reddish yellow abdomen usually infuscated along median line; male third antennal segment uncommonly large; slender labella folded back on haustellum, etc.

*Male only*.—Front and face wide, approximating one-half head width, dusted with grayish yellow pollen on pale ground color; uppermost prevertical small, preceding one stoutish or equal size of outer vertical; two or three frontal bristles beneath antennal base with a few minute setae extending below latter; frontalia pale reddish to yellow, nearly three times parafrontal width; antenna subequal length of face, short proximal segments red, third black, strongly widened to a subtruncate or broadly rounded apex; arista reddish, thickened on proximal two-fifths, second segment a little under one-half length of third and basal segment short; parafacial narrow; facialia with a few setae next to vibrissae which are on oral margin; haustellum slender but barely one-half head height; palpus yellow; cheek slightly under one-third eye length; eye bare. *Thorax* black, humeri, pleura and apex of scutellum more or less reddish, notum with dense gray patternless pollen, transverse suture evanescent; prosternum sparsely setose; three post dorsocentrals and sternopleurals; scutellum with three lateral,

one hairlike decussate upturned apical and one appressed discal pair. Legs yellow, tarsi black, claws and pulvilli minute. Wing clear with a yellowish tinge; costal spine vestigial; third vein setulose halfway or more to small cross vein; first posterior cell narrowly open at wing tip; hind cross vein about mid way between small cross vein and cubitulus; latter broadly rounded without fold or stump; last section of fifth vein one-third length of preceding section; epaulet yellow; calypters transparent tawny. *Abdomen* narrower than thorax, tapered toward tip; hairs on entire upper surface appressed; one pair of median marginals on second segment, a marginal row on last two; genitalia yellow, caudoventral; forceps rather short, triangular on basal half in rear view, thence compressed and very slender to apex; accessory process a trifle longer than forceps, slender beyond middle and moderately constricted before rounded apex.

*Length*, 4.5 mm.

*Holotype male*, MILL VALLEY, MARIN COUNTY, CALIFORNIA, May 30, 1926 (E. P. Van Duzee) "Ex: *Phryganidia pupae*," in the California Academy of Sciences Collection. Paratypes: seven males, same data as holotype.

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## A CHALKBOARD TECHNIQUE FOR MAKING ILLUSTRATIONS

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In making certain illustrations of internal acarine morphology, a chalkboard technique was developed which has proved to be highly satisfactory. This method is economical, requires simple dark room equipment, is time saving, tends to diminish small drawing errors and gives both 35 mm. slides as well as negatives for making prints.

Illustrations were drawn with white chalk on a 4 x 6 foot portable blackboard. All permanent white marks and scratches on the blackboard were covered with india ink. The drawings were made as large as the board permitted. The fingernail of the artist was used to make the rough outline on the blackboard. Illustrations were outlined with white chalk and stippled and highlighted with both white and black chalks. Freehand lettering was employed although other methods, such as precut labels, could have been substituted.

The finished drawing was photographed with a 35 mm. camera (Leica, 50 mm., 3.5) mounted on a tripod at a distance of approximately 12 feet. Camera "f" setting was 3.5, shutter speed from .25 to 1.0 second, using Kodak microfile film. The